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**National Voluntary Laboratory Accreditation Program (NVLAP)**  
**ON-SITE CHECKLIST**  
**for**  
**Electromagnetic Compatibility and Telecommunications**  
**47 CFR (FCC) Part 68/Industry Canada CS-03—Analog and Digital**

**Abstract**

This checklist is designed for use by a NVLAP assessor(s) during the conduct of an on-site assessment for initial or renewal of accreditation for FCC Part 68/Industry Canada CS-03—Analog and Digital. The checklist contains items from the NVLAP Program Handbook, NVLAP Procedures, Telecommunications Industry Association publication TSB31B, and technical references. The checklist is patterned after TSB31B.

The completed checklist becomes a part of the laboratory ON-SITE ASSESSMENT REPORT which is used in the evaluation of the laboratory for granting or renewal of accreditation. Deficiencies noted in this checklist must be resolved in accordance with the NVLAP Procedures. Comments not specified as deficiencies may be directed to the laboratory by the assessor.

Laboratory Name \_\_\_\_\_

NVLAP Assessor(s) \_\_\_\_\_

On-Site Dates \_\_\_\_\_

**Instructions to Laboratory**

Respond in writing within 30 days of the date of this report, addressing all deficiencies documented by the assessor. Each deficiency must be referenced, in your response, by number as it is listed in the report.

This on-site assessment report conveys the opinion of the assessor as a single representative of NVLAP. The final evaluation of your laboratory for the purpose of recommending approval or denial of accreditation will be conducted by NVLAP evaluators who will review this report, the written information submitted by you, and results of any required proficiency testing. You must respond to this report by identifying the actions you have taken, or plan to take, to correct the deficiencies identified. Respond in detail so that an accurate evaluation can be completed. Failure to respond may delay an accreditation decision. Questions concerning this report should be directed to NVLAP.

The assessor has discussed the contents of this report with members of the laboratory management who agree to respond in writing to NVLAP, regarding resolution or correction of any deficiencies noted, within 30 days of the date of this report.

\_\_\_\_\_  
Signature of Authorized Representative  
or designee

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date



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## FCC PART 68 CHECKLIST

### 1 PURPOSE

- 1.1 This checklist is designed for use by NVLAP assessor(s) during the conduct of an on-site assessment for initial or renewal of accreditation for FCC Part 68/Industry Canada CS-03 compliance testing. The checklist may contain items from the Program Handbook, NVLAP Procedures, and technical references.

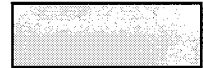
The completed checklist becomes a part of the laboratory ON-SITE ASSESSMENT REPORT which is used in the evaluation of the laboratory for granting or renewal of accreditation. Deficiencies noted in this checklist must be resolved in accordance with the NVLAP Procedures. Comments not specified as deficiencies may be directed to the laboratory by the assessor.

### 2 CHECKLIST ORGANIZATION

- 2.1 This checklist is patterned after the Test Requirements Matrix contained in the copyrighted TIA Telecommunications Systems Bulletin No. 31B (TSB31B), Part 68 Rationale and Measurement Guidelines, prepared by the EIA/TIA TR-41 Committee on Telephone Terminals.
- 2.2 The Matrix contained in Table 4.5-2 of TSB31B, covers sections 5 through 15 of that document and is reproduced herein by permission of the publisher. The checklist's section numbering scheme from sections 5 through 15 tracks sequentially the sections of TSB31B as they are applicable.
- 2.3 In order to facilitate tracking, wherever the material of a section or subsection of the TIA document is listed in the matrix but is not included in this checklist, the corresponding section or subsection number of the checklist is identified with "intentionally left blank."
- 2.4 Within each section, individual checklist items are identified by lower case letters in alphabetical order. Space is left after each checklist item for the assessor's comments.

### 3 REFERENCE DOCUMENTS

- 3.1 Beyond the QA manual and other documentation required of all NVLAP accredited laboratories, a quality Part 68/Industry Canada lab should possess a copy of the latest issue of the following documents:
- \_\_\_\_\_ a) FCC Part 68-Connection and Industry Canada connection of Terminal Equipment to the Telephone Network



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- \_\_\_\_\_ b) FCC Form 730 Application Guide-Registration of Telephone and Data Equipment (latest available version)
  
  - \_\_\_\_\_ c) Industry Canada, CS-03, Issue 8 or latest available version
  
  - \_\_\_\_\_ d) TIA TSB31B-Telecommunications Bulletin No. 31B-Part 68 Rationale and Measurement Guidelines
  
  - \_\_\_\_\_ e) UL1459-Standard for Telephone Equipment
  
  - \_\_\_\_\_ f) IEEE 1027-Standard Method for Measuring the Magnetic Field Intensity Around a Telephone Receiver
  
  - \_\_\_\_\_ g) UL 497A-Secondary Protection for Communication Circuits
  
  - \_\_\_\_\_ h) FCC Part 2-Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
  
  - \_\_\_\_\_ i) National Electrical Code.

#### 4 CONTINUING COMPLIANCE PROGRAM

- 4.1 Although it is the responsibility of the registrant to adhere to the FCC Part 68 Continuing Compliance Program, the engaging of an outside test facility for the initial Part 68 testing implies a degree of reliance upon, and therefore, responsibility on the part of the test lab for this function.
  - \_\_\_\_\_ a) Is the laboratory aware of the "6-month audit" requirements; i.e., the need to perform all of the applicable Part 68 test (other than environmental) on a current production line model every 6 months?

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- \_\_\_\_\_ b) Is the laboratory aware that if in the previous 6 months the equipment has experienced environmentally-caused failures, then the environmental tests must also be performed as part of the audit?
- \_\_\_\_\_ c) Does the laboratory inform the client of the Continuing Compliance Requirements in its initial report?

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Telecommunications Industry Association's  
publication TSB31B  
*Part 68 Rationale and Measurement Guidelines*  
by permission of the publisher

PART 68 REQUIREMENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
5. ENVIRONMENTAL SIMULATION 68.302																				
5.2 Mechanical Shock 68.302(a)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5.3 Telephone Line Surge-Type A, Metallic 68.302(b)(1) Note 1	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
5.4 Telephone Line Surge-Type A, Longitudinal 68.302(b)(2) Note 1	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
5.5 Telephone Line Surge-Type B, Metallic 68.302(c)(1) Note 1	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
5.6 Telephone Line Surge-Type B, Longitudinal 68.302(c)(2) Note 1	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
5.7 Power Line Surge 68.302(d)(1) Note 2	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X
6. LEAKAGE CURRENT LIMITATIONS (ANALOG & DIGITAL) 68.304 Notes 1 & 3	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7. HAZARDOUS VOLTAGE LIMITATIONS 68.306																				
7.1 General 68.306(a)																				
7.1.1 General (T & R)	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
7.1.2 E & M Leads 68.306(a)(1) and (2)				X	X															
7.1.3 OPS Voltage 68.306(a)(3)						X														
7.1.4 DID Voltage 68.306(a)(4)			X																	
7.1.5 LADC Current and Voltage 68.306(a)(5)							X													



NVLAP LAB CODE:

PART 68 REQUIREMENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
7.1.6 Ringdown Voiceband Private Line & Metallic Channel Interface 68.306(a)(6)								X												
7.2.1 Physical Separation of Leads 68.306(b)(1)	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
7.3 Ringing Source Limitations 68.306(d)						X		X												
7.4.1 Intentional Operational Paths to Ground 68.306(e)(1)		X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
7.4.2 Intentional Protective Paths to Ground 68.306(e)(2)	X	X	X	X	X	X	X	X		X	X		X	X		X	X		X	X
8. SIGNAL POWER LIMITATIONS 68.308 Note 4																				
8.1 Voiceband Metallic Signal Power 68.308(b)(1)	X	X	X	X	X	X		X												
8.2 Voiceband Signal Power Limiting Circuits 68.308(b)(1)	X	X	X	X	X	X		X												
8.3 Voiceband Signal Power-Network Control Signals 68.308(b)(2)	X	X	X	X	X															
8.4 DC Conditions for Through Transmission (on-premise) 68.308(b)(3)(i)	X																			
8.5 Data Equipment Connections for Through Transmission 68.308(b)(3)(ii)	X	X	X	X	X	X														
8.6 Voiceband Signal Power-Data 68.308(b)(4)	X	X	X	X	X	X														
8.8 Through Transmission Amplification 68.308(b)(5)(A-G)	X	X	X	X	X	X			X		X	X		X	X		X			
8.9 Through Transmission - SF Cutoff 68.308(b)(5)(i)(G)	X	X	X	X	X	X			X		X	X		X	X		X			
8.10 Through Transmission - SF/Guard Band 68.308(b)(5)(ii)	X	X	X	X	X	X			X		X	X		X						
8.11 Return Loss - Two-wire 68.308(b)(6)(i)				X																
8.12 Return Loss - Four-wire 68.308(b)(6)(ii)					X															
8.13 Transducer Loss - Four-wire 68.308(b)(6)(ii)					X															

PART 68 REQUIREMENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
8.14 DC Conditions for OPS Ports 68.308(b)(7)						X														
8.15 Signal Power 3995-4005 Hz 68.308(c)	X	X	X	X	X	X														
8.16 Voiceband Longitudinal Voltage, 0.1-4 kHz 68.308(d)	X	X	X	X	X	X		X												
8.17 Non-LADC Metallic Voltage, 4 kHz-6 MHz 68.308(e)(1)	X	X	X	X	X	X		X												
8.18 Non-LADC Longitudinal Voltage, 4 kHz-6 MHz 68.308(e)(2)	X	X	X	X	X	X		X												
8.19 LADC Metallic Voltage, 0.01 kHz-6 MHz 68.308(f)							X													
8.20 LADC Longitudinal Voltage, 0.01 kHz-6 MHz 68.308(f)(3)							X													
9. TRANSVERSE BALANCE LIMITATIONS 68.310																				
9.2 Digital EUT 68.310(c)										X	X	X	X	X	X	X	X	X	X	X
10. ON-HOOK IMPEDANCE LIMITATIONS 68.312																				
10.1 DC Resistance 68.312(b)(1)(i) & (ii)	X																		X	X
10.2 DC Current During Ringing 68.312(b)(1)(iii)/(c)(1)	X	X																	X	X
10.3 AC Impedance During Ringing 68.312(b)(1)(iv) & (v)/(c)(2)	X	X																	X	X
10.4 REN Calculation 68.312(d)-(f)	X	X																	X	X
10.5 OPS Interfaces for PBX with DID 68.312(g)						X														
10.6 Make-Busy 68.312(i)	X	X																		
11. BILLING PROTECTION 68.314 Note 3																				
11.1 Call Duration for Data Equipment PC 68.314(a)(1) Note 4	X	X	X	X	X			X												
11.2 Call Duration for Data Applications RTE 68.314(a)(2)	X	X	X	X	X			X												
11.3 On-Hook Signal Requirements 68.314(b)	X	X	X	X	X			X												

NVLAP LAB CODE:

PART 68 REQUIREMENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
11.4 Loop Current Requirements 68.314(c)	X	X																		
11.5 Signaling Interference 68.314(d)(1)	X	X	X					X												
11.6 Operating Requirements for DID (Analog TE) 68.314(g)			X																	
12. HEARING-AID COMPATIBILITY - MAGNETIC FIELD INTENSITY 68.316 Note 6	X											X		X	X		X			
HEARING-AID COMPATIBILITY - VOLUME CONTROL 68.317 Note 6	X											X		X	X		X			
13. DIGITAL TERMINAL EQUIPMENT 68.308 Note 7																				
13.1.1 Subrate Pulse Repetition Rate 68.308(h)(1)(i) Note 8									X	X	X									
13.1.2 Subrate and PSDS Pulse Template 68.308(h)(1)(ii) & (h)(3)										X	X								X	X
13.1.3 Subrate Average Power 68.308(h)(1)(iii)										X	X									
13.1.4 Subrate, PSDS, and ISDN BRI Encoded Analog Content 68.308(h)(1)(iv), (b)(1)(viii), (b)(2)(iii), & (h)(4) Note 9									X	X	X				X	X	X	X		X
13.1.5 Subrate & PSDS & ISDN BRI Signaling Interference 68.314(d)(2)									X	X	X									
13.1.6 Subrate On-Hook Level 68.314(e)									X	X	X									
13.2.1 1.544 Mb/s Pulse Repetition Rate 68.308(h)(2)(i) Notes 8 & 14												X	X	X	X					
13.2.2 1.544 Mb/s Pulse Template 68.308(h)(2)(ii)													X	X						
13.2.3 1.544 Mb/s Output Power 68.308(h)(2)(iv)													X	X						
13.2.4 1.544 Mb/s Encoded Analog Content 68.308(h)(2)(v)																				
13.2.5 1.544 Mb/s Signaling Interference 68.314(d)(2) Note 14												X		X						

NVLAP LAB CODE:

PART 68 REQUIREMENT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
13.2.6 1.544 Mb/s On-Hook Level 68.314(e) Note 15												X		X						
13.2.7 1.544 Mb/s Signaling Duration 68.314(f) Note 15												X		X						
13.2.8 1.544 Mb/s Direct Inward Dialing 68.314(g) Note 15												X		X						
14. MISCELLANEOUS																				
14.1 Limitations on Automatic Redialing 68.318(b)	X	X		X	X							X	X	X	X	X	X			
14.2 Line Seizure by Automatic Telephone Dialing Systems 68.318(c)	X																			
14.3 Facsimile Machine Sender ID 68.318(d)	X																			
14.4 Equal Access to Common Carriers 68.318(e)	X	X		X	X							X	X	X	X	X	X			
15. MINIATURE PLUGS & JACKS 68.500 Note 10	X	X	X	X	X	X	X	X		X	X		X	X		X	X	X	X	X

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**5 ENVIRONMENTAL SIMULATION****5.1 Intentionally left blank****5.2 *Mechanical Shock*****CS-03, Part I, Section 2.1**

\_\_\_\_\_ a) Is an asphalt tile covered concrete surface available for the shock tests?

\_\_\_\_\_ b) Are shock tests performed unpackaged?

\_\_\_\_\_ c) Is mechanical drop equipment performed only on equipment that weighs between 0 and 5 kilograms?

\_\_\_\_\_ d) Are drop tests performed for each required orientation of the EUT?

\_\_\_\_\_ e) Does tester appreciate the required EUT weight vs. required test drop height relationships?

**5.3, 5.4, 5.5, 5.6, and 5.7 Surge Tests****CS-03, Part I, Section 2.4**

NOTE: The following checklist items apply to all five types of surges covered in sections 5.3, 5.4, 5.5, 5.6 and 5.7 below.

\_\_\_\_\_ a) Are photos of current waveforms on file?

\_\_\_\_\_ b) Is date of current waveform representations more recent than one year?

\_\_\_\_\_ c) Is surge generator capable of producing surges of both polarities for all four voltages: 800 V, 1000 V, 1500 V, and 2500 V?

\_\_\_\_\_ d) Is the surge generator's working state verified before each use or at least at the beginning of each test day?

**5.3      *Metallic "Type A" Voltage Surge (800 V)*      CS-03, Part I, Section 2.4.1**

- \_\_\_\_\_ a)      Are the pulse characteristics as follows: open circuit voltage 800 V peak; maximum rise time to crest 10  $\mu$ s; minimum decay time to half crest 560  $\mu$ s; peak current capability 100 A minimum?

**5.4      *Longitudinal "Type A" Voltage Surge (1500 V)*      CS-03, Part I, Section 2.4.2**

- \_\_\_\_\_ a)      Are the pulse characteristics as follows: open circuit voltage 1500 V peak; maximum rise time to crest 10  $\mu$ s; minimum decay time to half crest 160  $\mu$ s; and peak current capability 200 A minimum?

**5.5      *Metallic "Type B" Voltage Surge (1000 V)*      (No CS-03 equivalent)**

- \_\_\_\_\_ a)      Are the pulse characteristics as follows: open circuit voltage 1000 V peak; maximum rise time to crest 9  $\mu$ s; minimum decay time to half crest 720  $\mu$ s; and peak current capability 25 A minimum?

**5.6      *Longitudinal "Type B" Voltage Surge (1500 V)*      (No CS-03 equivalent)**

- \_\_\_\_\_ a)      Are the pulse characteristics as follows: open circuit voltage 1500 V peak; maximum rise time to crest 9  $\mu$ s; minimum decay time to half crest 720  $\mu$ s; and peak current capability 37.5 A minimum?

**5.7      *Longitudinal Voltage Surge (Power Supply) (2500 V)*      CS-03, Part I, Section 2.5**

- \_\_\_\_\_ a)      Are the pulse characteristics as follows: maximum rise time to crest 2  $\mu$ s; minimum decay time to half crest 10  $\mu$ s; and peak current capability 1000 A minimum?

**6      LEAKAGE CURRENT LIMITATIONS      CS-03, Part I, Section 2.2**

- \_\_\_\_\_ a)      Is 50 Hz/60 Hz source capable of producing 1000 V and 1500 V and a current of at least 10 mA peak?

- \_\_\_\_\_ b) Is the voltage ramped up over a 30 second period and allowed to stay at the maximum voltage for an additional 60 seconds?
- \_\_\_\_\_ c) When the EUT contains line relay contacts on the network side of the dielectric barrier, are provisions made to close these contacts, artificially, if necessary, without affecting the current path?
- \_\_\_\_\_ d) For the 1500 V EUT to power line barrier test is the EUT's power switch turned on?

## 7 HAZARDOUS VOLTAGE LIMITATIONS

CS-03, Part I, Section 2.3

### 7.1 *General*

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope available that is capable of measuring peak voltages of greater than 70 volts?

#### 7.1.2 *E & M Leads*

CS-03, Part I, Section 2.3.2

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope, a DC current meter, a DC volt meter and a true RMS voltmeter available?
- \_\_\_\_\_ b) Are DC voltage measurements made across a 20 k ohm resistance?

#### 7.1.3 *OPS Voltages*

CS-03, Part I, Section 2.3.4

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope, a DC current meter, a DC volt meter and a true RMS voltmeter available?

**7.1.4 DID Voltages****CS-03, Part I, Section 2.3.4**

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope, a DC current meter, a DC volt meter and a true RMS voltmeter available?

**7.1.5 LADC Current and Voltage**

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope, a DC current meter, a DC volt meter and a true RMS voltmeter available?

**7.1.6 Ringdown Voiceband Private Line  
and Voiceband Metallic Channel Interface****CS-03, Part I, Section 2.3.5**

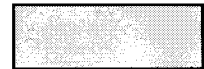
- \_\_\_\_\_ a) Is a Digital sampling oscilloscope, a DC current meter, a DC volt meter and a true RMS voltmeter available?

**7.2 Intentionally left blank****7.3 Ringing Source Limitations****CS-03, Part I, Section 2.3.7**

- \_\_\_\_\_ a) Is a Digital sampling oscilloscope and a frequency counter available?
- \_\_\_\_\_ b) Are peak-to-peak ringing current measured through 500 ohms and 1500 ohms?

**7.4 Intentional Paths to Ground****CS-03, Part I, Section 2.3.7****7.4.1 Intentional Operational Paths to Ground****CS-03, Part I, Section 2.3.9.1**

- \_\_\_\_\_ a) Is a Variable DC current source, a DC volt meter and a DC Current meter available?
- \_\_\_\_\_ b) Is the Variable DC current source capable of providing 1 Amp of current for a period of 1 minute?



#### 7.4.2 *Intentional Protective Paths to Ground*

CS-03, Part I, Section 2.3.9.2

- \_\_\_\_\_ a) Is a Variable AC voltage source (60 Hz) and an AC Current meter available?
- \_\_\_\_\_ b) Is the Variable AC voltage source capable of providing 10 mAmp of current at AC voltages of 120V and 300 V for a period of 1 minute?

### 8 SIGNAL POWER LIMITATIONS

CS-03, Part I, Section 3.4.1

#### 8.1 *Voiceband Signal Power*

- \_\_\_\_\_ a) Is a true rms ac voltmeter with 3 second averaging capability used?
- \_\_\_\_\_ b) Is a bandpass filter with: input impedance > 100 kohms; bandpass 200 to 4 kHz (3 dB points); and out-of-band rolloff > 24 dB per octave used?

#### 8.2 *Voiceband Signal Power Limiting Circuits*

CS-03, Part I, Section 3.4.8

- \_\_\_\_\_ a) Are output signals measured at a minimum of five frequencies in the voice band?

#### 8.3 *Voiceband Signal Power - Network Control Signals*

CS-03, Part I, Section 3.4.3

- \_\_\_\_\_ a) Are signal power measurements made at minimum and maximum loop currents?

#### 8.4 *DC Conditions for Through Transmission*

CS-03, Part I, Section 3.4.5

NOTE: In this instance, this question is used to determine whether the laboratory's own loop simulator circuit meets the requirements specified in Part 68, Fig. 68.3.

- \_\_\_\_\_ a) Can it be demonstrated that the laboratory's loop simulator circuit contains a continuously variable resistance of 400 to 1740 ohms for loop start applications and 400 to 2450 ohms for ground start applications?



8.5 Intentionally left blank

8.6 *Voiceband Signal Power - Data*

CS-03, Part I, Section 3.4.4

- \_\_\_\_\_ a) For programmed data equipment, are signal power measurements made with each value of programming resistor; i.e., 0, 150, 336, 569, 866, 1240, 1780, 2520, 3610, 5490, 9200, 19800 ohms and open circuit?

8.7 *Voiceband Signal Power - Data Protective Circuitry*

- \_\_\_\_\_ a) For EUTs equipped with a programmable jack configuration, are measurements made for all values of the programming resistor?

8.8 Intentionally left blank

8.9 Intentionally left blank

8.10 Intentionally left blank

8.11 *Return Loss - 2-Wire*

CS-03, Part I, Section 3.8

- \_\_\_\_\_ a) Is a reference network comprising a 600 ohm resistor in series with a 2.16  $\mu$ F capacitor available?

8.12 *Return Loss - 4-Wire*

CS-03, Part I, Section 3.8

- \_\_\_\_\_ a) Is a reference network comprising a 600 ohm resistor available?

8.13 *Transducer Loss - 4-Wire*

CS-03, Part I, Section 3.8.1.2

- \_\_\_\_\_ a) Is a reference network comprising a 600 ohm resistor in series with a 2.16  $\mu$ F capacitor available?

- \_\_\_\_\_ b) Is a Spectrum Analyzer along with Tracking Generator available?



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**8.14      *DC Conditions for OPS Ports*      (No CS-03 equivalent)**

- \_\_\_\_\_ a)      Are a DC Current Meter and a DC Voltmeter available?

**8.15      *Signal Power 3995 Hz to 4005 Hz*      CS-03, Part I, Section 3.4.6**

- \_\_\_\_\_ a)      Is a 10 Hz bandpass filter having the following characteristics: input impedance > 100 kohms; bandpass 3995 Hz to 4005 Hz, cutoff frequencies at the 3 dB points; and out-of-band rolloff > 24 dB per octave available?

**8.16      *Voiceband Longitudinal Voltage*      CS-03, Part I, Section 3.3.3.1  
*0.1 kHz to 4 kHz***

- \_\_\_\_\_ a)      Is an appropriate weighting filter as described in Fig. 68.308(a) of Part 68 used for this measurement?
- \_\_\_\_\_ b)      Is the 600 ohm metallic/500 ohm longitudinal termination available for this measurement?
- \_\_\_\_\_ c)      Is a true rms voltmeter capable of averaging over 0.1 s available for making this measurement?
- \_\_\_\_\_ d)      Is the  $\pm 3.1$  dB voltage divider effect correction applied to the raw measurement before submitting application?

**8.17      *Non-LADC Metallic Voltage 4 kHz to 6 MHz*      CS-03, Part I, Section 3.4.6**

- \_\_\_\_\_ a)      Are the resistive terminations of 300 and 135 ohms available for these measurements?



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**8.18      *Non-LADC Longitudinal Voltage***  
**4 kHz to 6 MHz**

**CS-03, Part I, Section 3.3.3.2**  
**/3.3.3.3**

- \_\_\_\_\_ a)      Are the resistive terminations for 300 ohms metallic/500 ohms longitudinal and 135 ohms metallic/90 ohms longitudinal available for these measurements?
- \_\_\_\_\_ b)      Is the +1.4 dB correction for the voltage divider effect applied to the raw data prior to submitting the application (4 kHz to 12 kHz)?
- \_\_\_\_\_ c)      Is the +4 dB correction for the voltage divider effect applied to the raw data prior to submitting the application (12 kHz to 6 MHz)?

**8.19      Intentionally left blank**

**8.20      Intentionally left blank**

**9      LONGITUDINAL BALANCE**

**CS-03, Part I, Section 3.6**

**9.1      *Analog EUT***

NOTE: Items 9.1.1, 2, 3, 4, and 7 are also applicable to the *Digital* section.

- \_\_\_\_\_ a)      Is EUT properly configured; i.e., all normal ground paths connected to the ground plane, such as ac power ground, water pipe ground, metallic exposed surface, connections to other equipment through which ground may be introduced?
- \_\_\_\_\_ b)      Is all test equipment, i.e., battery feed supply (if required), connecting cables, etc. as well as the 600 ohm or other termination, included in the bridge calibration procedure?
- \_\_\_\_\_ c)      Are all balance measurements made with T&R normal and T&R transposed?

- 
- \_\_\_\_\_ d) Is ground plane of sufficient area (50% greater than EUT "footprint") on which to rest ungrounded EUT available?
- \_\_\_\_\_ e) Are off-hook measurements made with more than one magnitude of loop current?
- \_\_\_\_\_ f) In the voice frequency band, can the bridge be balanced to 80 dB for 200 to 1000 Hz and 60 dB for 1000 to 4000 Hz?
- \_\_\_\_\_ g) Is this correction factor -3 dB for the voice band (at 600 ohms)?

**9.2 Digital EUT****CS-03, Part VI, Section 3.4**

- \_\_\_\_\_ a) Can the M-L (FCC) method digital L.B. bridge be calibrated to 55 dB balance?
- \_\_\_\_\_ b) Is balance measurement performed on both TIP/RING pairs?

**10 ON HOOK IMPEDANCE LIMITATIONS****CS-03, Part I, Section 3.7****10.1 DC Resistance****CS-03, Part I, Section 3.7.1**

- \_\_\_\_\_ a) If EUT is externally powered, are dc resistance measurements made in both, the powered and unpowered states?
- \_\_\_\_\_ b) Are measurements made beginning at 1 volt DC and at one volt increments until 100 volts and then every ten volts up to 200 volts DC?
- \_\_\_\_\_ c) Are these measurements made for both polarities?



\_\_\_\_\_ d) Are measurements also made from Tip to Ground and Ring to Ground for the voltages listed above and performed in both polarities?

\_\_\_\_\_ e) Is internal resistance of measuring equipment taken into account?

**10.2 DC Current During Ringing**

**CS-03, Part I, Section 3.7.2**

\_\_\_\_\_ a) Is dc voltage 56.5 V?

\_\_\_\_\_ b) Are measurements made at the lowest, highest, and one or more intermediate ringing frequencies for the particular ringing type (three intermediate frequencies for "B" type ringers)?

\_\_\_\_\_ c) Are measurements made at least at the lowest and highest ac voltage at each frequency for the particular ringing type?

\_\_\_\_\_ d) Are measurements in "10.2.1" and "10.2.2" above also made with the Tip and Ring transposed?

**10.3 AC Impedance During Ringing**

**CS-03, Part I, Section 3.7.3**

\_\_\_\_\_ a) Is dc voltage 56.5 V?

\_\_\_\_\_ b) Are measurements made at the lowest, highest, and one or more intermediate ringing frequencies for the particular ringing type (three intermediate frequencies for "B" type ringers)?

\_\_\_\_\_ c) Are measurements made at least at the lowest and highest ac voltage at each frequency for the particular ringing type?



- \_\_\_\_\_ d) Are measurements in "10.3.1" and "10.3.2" above also made with the Tip and Ring transposed?

#### 10.4 *REN Calculation*

CS-03, Part I, Section 3.7.3

- \_\_\_\_\_ a) Are measurements made at the lowest, highest, and one or more intermediate ringing frequencies for the particular ringing type (three intermediate frequencies for "B" type ringers)?
- \_\_\_\_\_ b) Are measurements made at least at the lowest and highest ac voltage at each frequency for the particular ringing type?
- \_\_\_\_\_ c) Are measurements above also made with the Tip and Ring leads transposed?

#### 10.5 *DID Signaling and OPS Ringing*

(No CS-03 equivalent)

- \_\_\_\_\_ a) Is the ringing "load" selected to simulate the PBX's maximum number of stations as specified by the PBX manufacturer?

#### 10.6 *Make Busy*

(No CS-03 equivalent)

- \_\_\_\_\_ a) Refer to Part 68, Section 68.200 when considering Make Busy. Is the EUT evaluated to determine that it does not go off-hook for purposes other than initiating or receiving a call?

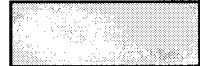
### 11 BILLING PROTECTION

CS-03, Part I, Section 3.5

#### 11.1 *Call Duration for Registered Terminal Equipment for Data Applications*

(No CS-03 equivalent)

- \_\_\_\_\_ a) Can the capabilities of the digital sampling oscilloscope used for making these measurements be demonstrated?



- \_\_\_\_\_ b) Can the identification of any allowable signals appearing before two seconds of off-hook time be demonstrated?

**11.2 Intentionally left blank**

**11.3 *On-Hook Signal Requirements* CS-03, Part I, Section 3.3.1/3.3.2**

- \_\_\_\_\_ a) When measuring the output signal power, is the EUT placed in all of its normal inactive states, such as its various "housekeeping" routines, if any?

**11.4 *Loop Current Requirements* CS-03, Part I, Section 3.5.1**

- \_\_\_\_\_ a) Is a DC current meter, a Digital sampling storage oscilloscope and a Frequency generator available?
- \_\_\_\_\_ b) Is the current drawn by the equipment under test monitored closely during the first five seconds after the EUT goes off-hook?

**11.5 *Signaling Interference* CS-03, Part I, Section 3.5.2**

- \_\_\_\_\_ a) Do the 800 Hz to 2450 Hz and 2450 Hz to 2750 Hz bandpass filters have the following characteristics: input impedance  $\geq 100$  kohms; cut-off frequencies at the 3 dB attenuation points; and out-of-band rolloff  $\geq 24$  per octave?

**11.6 Intentionally left blank**

**12 HEARING AID COMPATIBILITY CS-03, Part V**

- \_\_\_\_\_ a) Can evidence of the Helmholtz coil calibration of the probe coils be produced?
- \_\_\_\_\_ b) Are any correction factors resulting from the calibrations applied to the measurements?



- \_\_\_\_\_ c) Does the HAC test fixture permit the proper coupling and orientation of the EUT's receiver to make measurements as prescribed in Part 68 (and EIA RS-504-1983)?

**12.2.4 Volume Control (ROLR)**

**CS-03, Part V, Section 6**

- \_\_\_\_\_ a) Does the lab have acoustic equipment to perform the Receive Objective Loudness Rating as defined in TIA/EIA 470-A-1987 and TIA/EIA 579-1991?

- \_\_\_\_\_ b) Does the lab have the appropriate test setup to simulate the artificial line specified for the 3 loop lengths specified (0, 2.7, 4.6 Km)?

**13 DIGITAL TERMINAL EQUIPMENT**

**CS-03, Part VII, Section 3.2**

**13.1.1 Subrate Pulse Repetition Rate**

**CS-03, Part VII, Section 3.2.1**

- \_\_\_\_\_ a) Is test performed for each of the data rates at which the EUT is capable of operating?

**13.1.2 Subrate Pulse Template**

**CS-03, Part VII, Section 3.2.2**

- \_\_\_\_\_ a) Is the data generator used in this test capable of causing the EUT to transmit a signal which will allow the capture of a single pulse; i.e., with a minimum of one leading and one trailing zero?

- \_\_\_\_\_ b) Is the lab equipped with the proper template to verify the results of this measurement?

**13.1.3 Subrate Average Power**

**CS-03, Part VII, Section 3.2.3**

- \_\_\_\_\_ a) Is measurement made at all of the transmission rates?



\_\_\_\_\_ b) Are the measurements made with 135 ohm termination and, if not, is correction applied to the results?

\_\_\_\_\_ c) Is averaging done over at least 3 seconds?

**13.1.4 Subrate Analog Content**

**CS-03, Part VII, Section 3.2.4**

\_\_\_\_\_ a) Is power measured using a 600 ohm termination?

\_\_\_\_\_ b) Is power averaged over 3 seconds?

**13.1.5 Subrate Signaling Interference**

**CS-03, Part VII, Section 3.2.5**

\_\_\_\_\_ a) Is the test performed for each of the EUT's generated signals?

**13.1.6 Subrate On-Hook Level**

**CS-03, Part VII, Section 3.2.6**

\_\_\_\_\_ a) Are readings taken in dBm with respect to 600 ohms?

**13.2.1 1.544 Mb/s Pulse Repetition Rate**

**CS-03, Part II, Section 3.2**

\_\_\_\_\_ a) Are both the transmit and receive pairs terminated properly in 100 ohms?

**13.2.2 1.544 Mb/s Pulse Template**

**CS-03, Part II, Section 3.3**

\_\_\_\_\_ a) Is the data generator used in this test capable of causing the EUT to transmit a signal which will allow the capture of a single pulse; i.e., with a minimum of one leading and one trailing zero?

\_\_\_\_\_ b) Is the lab equipped with proper templates to verify the results of all three of these measurements?

**13.2.3 1.544 Mb/s Output Power****CS-03, Part II, Section 3.4**

- \_\_\_\_\_ a) Are output power measurements made for all three pulse options; i.e., 0 dB, 7.5 dB and 15 dB loss at 772 kHz?
- \_\_\_\_\_ b) If an "all ones" signal is not possible, are the necessary corrections made to the data based on the pulse density used?

**13.2.4 1.544 Mb/s Encoded Analog Content****CS-03, Part II, Section 3.6.3**

- \_\_\_\_\_ a) Is power measured using a 600 ohm termination?
- \_\_\_\_\_ b) Is power averaged over 3 seconds?

**13.2.5 1.544 Mb/s Signaling Interference****CS-03, Part II, Section 3.6.4**

- \_\_\_\_\_ a) Is the test performed for each of the EUT's generated signals?

**13.2.6 1.544 Mb/s On-Hook Level****CS-03, Part II, Section 3.6.1.2**

- \_\_\_\_\_ a) Are readings taken in dBm with respect to 600 ohms?

**13.2.7 Signaling Duration****CS-03, Part II, Section 3.5.1**

- \_\_\_\_\_ a) Is the minimum five-second interval measured as opposed to estimated?

**13.2.8 Operating Requirements for 1.544 Mb/s Direct Inward Dialing****CS-03, Part II, Section 3.5.2**

- \_\_\_\_\_ a) Is the maximum of .5-second interval measured as opposed to estimated?




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**14 MISCELLANEOUS**

**14.1 *Limitations on Automatic Redialing***

**CS-03, Part I, Section 3.9**

- \_\_\_\_\_ a) Is the person responsible for testing versed in the details of the limitations such as the number of times redialing is allowed and which types of equipment are exempt from this requirement?

**15 Intentionally left blank**

**16 FAILURE ANALYSIS**

**16.1 *Failure Analysis Program***

- \_\_\_\_\_ a) Does the laboratory have a failure analysis program as suggested in Appendix F of the Form 730 Application Guide (12/7/92 version and later)?
- \_\_\_\_\_ b) Are records of test failures kept for statistical studies? Have statistical studies been conducted?
- \_\_\_\_\_ c) Are the laboratory failure analysis program and records adequate?



